

## BOOK REVIEWS

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**Radiobiology of Plutonium.** Edited by Betsy J. Stover and Webster S. S. Jee  
The J. W. Press, University of Utah, Salt Lake City, 1972. 537 pp. \$17.50.

In 1973, with the increasing involvement of the European Community in the controversies related to the adoption or development of a nuclear energy programme, it is worthwhile looking at the facets of evolved and experimental data which have accrued over the past 20 years, collated in 1969, and published in 1972.

The contemporary relevant factors which this volume points out are the need to quantitate the quality and prevalence of damage in the light of contemporary estimates and to emphasise the essential length of time needed if these are to be correlated with studies on population exposures, in order to derive an estimate of relevant damage in the current context.

Although this volume predominantly reports progress studies of beagles with incorporated  $^{239}\text{Pu}$ , looking at the probably irrelevant route of subcutaneous incorporation, as well as the important inhalation routes for incorporation, other important variables, both interspecies, as well as those of age, sex, or chelating agents, are also reported.

In moving towards mechanistic studies, the cellular deposition and retention of  $^{239}\text{Pu}$  has been related to malignant neoplasms. Relative toxicity is compared mostly with Americium—about which much is unknown.

The striking feature of this volume is, however, the confirmation that ultimately, radiobiological effects must be tested in man. In the early, historical, chapter, on the use of 'terminal patients', from 1944-47, to assess plutonium toxicity, there are signposts indicating the waste of human data, from a then expensive, and possibly unacceptably hazardous, procedure to the patient. In this early chapter, several cogent references are 'secret', 'restricted', or available in an internal laboratory report. With hindsight, the ethical choice of some subjects, and the high percentage of loss of material, with no *post mortem* examination is a striking warning. These human data, however piecemeal they may have seemed, are essential to the radiological protection and medical scientific community, if we are not to over- or under-estimate the hazards from environmental plutonium levels, to which we will be exposed during the increasing development of all facets of the nuclear power programme.

A noteworthy feature of the volume is the setting up of the US Transuranium Registry. This is not a post-damaged retrospective survey, but an approach to preventive and quantitative radionuclide toxicity which any community embarking on a nuclear energy programme could well emulate.

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